CODING PROCEDURE FOR TEACHERS¹EDWARD S. KUBANY AND BARBARA B. SLOGGETT²

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An observational technique for reliably estimating the per cent of time a student engages in appropriate and inappropriate classroom behavior is described. The regular classroom teacher can utilize the procedure without deviating from regular routine, and the obtained data can serve as a basis for dispensing token reinforcement.

On-going observation and objective evaluation have been hallmarks of behavior modification research and application. However, in most classroom experiments dealing with frequently occurring deviant behavior, the record keeper has been an outside observer, typically a psychologist or research assistant (Kubany, Weiss, and Sloggett, 1971; Wasik, Senn, Welch, and Cooper, 1969). Such extravagant and often inconvenient use of outside personnel is certainly justifiable for research purposes but is probably uneconomical for widely accepted practical application.

In most cases, the teacher has not been solicited as an observer on the assumption that she has too much else to do; she can not conduct her class efficiently and record behavior reliably at the same time. When teachers have been recruited for observing purposes, they have usually been asked to obtain only a simple frequency count of a target behavior, and the reliability of these observations is often in doubt. Even wrist counters are easily forgotten under the pressures of teaching, and observational reports from teachers are often vague. ("I think he had two or three tantrums last week.") When the re-

ferrals have concerned questions such as what per cent of the time a student spends on-task or disrupting the class, outside observers have been employed almost exclusively.

The present report describes an easily learned observing and recording procedure that can be utilized by the regular classroom teacher without requiring her to deviate more than momentarily from regular classroom routine. The procedure can yield an objective statement as to approximately how much time a given student spends doing his work, wasting time, and bothering others.

The Code Sheet and Timer

The code sheet shown in Figure 1 was designed to accommodate different kinds of classroom situations. Depending upon which one of the three coding columns is utilized, the teacher observes and records a student's behavior on either a 4-, 8-, or 16-min variable-interval schedule. If the teacher has the problem student for only one class period daily, it would be advisable to use the 4-min recording schedule. On the other hand, if the teacher has the student in her class all day long, she might choose to use the 8- or 16-min schedule. The numbers beside each space on the code sheet designate the number of minutes for which a kitchen timer is to be set. One of the three time schedules should be selected, and then only that column should be utilized. At the beginning of the class period, the time should be set for a time interval that

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corresponds to one of the numbers in the selected column. When the timer "goes off", it should be reset without delay at the next number (immediately below) in the same column.

The timer should be placed in such a position that the clock face is not visible to the class. With the clock face out of sight and the intervals variable, the student has no way of telling when the timer will "go off".

Observing and Recording

When the timer bell rings, the teacher glances at the student and identifies what he is doing *at that instant*. Is he: (1) "On-task" (A)—that is, doing what the teacher wants him to do; (2) "Passive" (P)—not doing what he should be doing, but not disrupting others; or is he (3) "Disruptive" (D)—*e.g.*, out of seat, talking without permission, or making other noise. The teacher enters the appropriate code symbol—either "A", "P", or "D" in the space next to the number representing the time interval just passed. The timer should then be reset without delay.

To minimize the time spent recording, it is recommended that the teacher carry a pencil and a clipboard with the code sheet attached. To minimize any inconvenience, the teacher might allow a conscientious student to set and reset the timer. It would sit on his desk, and he also would have a code sheet so that he would know how to schedule the appropriate time intervals.

Initial Instructions to Class

"May I have your attention please? Every once in a while this timer will ring. Do not pay any attention to it. I am doing this to keep track of certain things I want to do. Simply disregard the bell and continue with your work." After the first several times the timer rings, certain class members may attend to the bell and even make comments about it. The teacher should ignore all references to the timer. In a short period of time, the class should adapt to the bell, and it will not disrupt the students when they are working.

Interpretation and Validity of the Recording

For any given day, and for longer periods of time, it is possible to calculate the approximate percentage of time that the student spends "on-task", "passive", and "disruptive". Simply divide the total number of spaces marked "A", "P", or "D" by the total number of observations. For example, if seven out of 10 observations are coded as "on-task", the student may be estimated to have been on-task approximately 70% of the time.

Although the teacher will record relatively few observations at infrequent intervals, there is evidence that the percentages yielded are likely to reflect the total population of behaviors occurring during the entire period. In a classroom study by Kubany *et al.* (1971), observations were made and recorded over a 50-day period. During the daily 20-min observation sessions, an outside observer would glance at the first-grade subject every 15 sec, classify his behavior at that moment, and then record on the code sheet. During the 20-min session the boy's behavior was observed and coded 80 times, and the daily per cent of "disruptive" behavior was estimated and plotted graphically. Using the variable-interval 4-min (VI 4-min) schedule on the teacher's observation code sheet, a sampling of these daily recordings was used for recalculating the daily percentages of "disruptive" behavior. For example, the percentage of "disruptive" behavior for day one of baseline was computed on the basis of observations recorded only at the 2-, 7-, 14-, 15-, and 18-min junctures (five times during 20 min). Figure 2 shows graphically how the percentages compare under the two different recording schedules. One can see that making only four or five observations per 20-min session yielded a record remarkably similar to the one in which 80 observations were recorded.³

³One implication of this finding is that many researchers may have spent more time observing than was necessary in order to make reliable inferences about the frequency of occurrence of certain behaviors. Elementary probability theory tells us that even with

Date _____ Student _____ Teacher _____ Starting Time _____ Activity _____			
COMMENTS	FOUR	EIGHT	SIXTEEN
	2	12	12
	5	2	8
	7	10	28
	1	4	2
	3	6	24
	6	14	6
	4	8	24
	6	2	6
	4	10	30
	1	14	12
	2	8	16
	5	10	4
	3	6	8
	7	4	30
	2	12	28
	1	4	6
	7	12	24
	3	14	16
	4	2	12
	5	6	2

Fig. 1. Teacher's observation code sheet. Four, 8, and 16-min variable-interval schedules.

Table 1

A comparison of results obtained using two different observation schedules.

	Daily Mean Per Cent of Observations Coded as Disruptive	
	4-min Variable- Interval Schedule (four or five observations per 20-min session)	15-sec Fixed- Interval Schedule (80 observations per 20-min session)
Baseline (11 days)	88	90
Reinforcement (31 days)	17	15
Reversal (two days)	99	95
Reinforcement (six days)	13	16

relatively few randomly selected observations, there is good reason to expect that the observed relative frequency will be quite close to the true state of affairs (Hays, 1963).

These comparisons are summarized in Table 1. During baseline, the average per cent of "disruptive" behavior was calculated as 88% based on the fixed-interval 15-sec (FI 15-sec) schedule. Based on the VI 4-min schedule, the percentage was 90—only two percentage points difference. During the first intervention period, the percentages were 17 and 19, under the FI and VI schedules respectively. A similar correspondence of results was obtained during the reversal and second reinforcement periods.

Under certain circumstances, the teacher's code may yield even more representative information than that garnered from an outside observer who spends 20 or 30 min in the classroom daily. Intervention programs frequently run all day, and there certainly is no basis for assuming that the 20-, or 30-min observation period is a random sample of the total population of behaviors of concern. On the other hand, the teacher is in a position to collect data all day on a systematic interval basis that can be representative of the entire population of relevant behaviors. And different patterns of behavior at different times of the day might provide insights about reinforcing stimuli or sources that maintain inappropriate behavior.

Finally, when the teacher is the observer, neither the teacher nor the students have to adapt to visitors in the classroom, and there need be no concern about possible experimental effects due to the presence of an outside observer (Surratt, Ulrich, and Hawkins, 1969).

Alternate Procedures

When a misbehavior of interest occurs only sporadically (e.g., swearing, fighting, occasional outbursts, or tantrums), it might be preferable to record simply whether or not the behavior of interest occurs or does not occur during an entire interval period (that is, from one bell ring to the next). Say, for example, that the problem behavior is "Swearing", and the first timer setting is 10 min. If swearing occurs at any time during this 10-min interval, the teacher immediately records the symbol "Y" (Yes) in the recording

Fig. 2. Graphic comparison of results obtained under two different observational schedules. Daily percentages of observations per 20-min session during which student's behavior was coded as disruptive, obtained with FI 15-sec and VI 4-min observational schedules.

space for that interval. It is no longer necessary to record any further swearing behavior for that 10-min interval. The symbol "Y" simply means that at least one swearing behavior occurred during the entire time interval. If no swearing behavior had occurred during the entire interval, the teacher should record the symbol "N" (No) when the timer bell rings.

It would also be possible to use both of the two general coding procedures simultaneously. For example, the teacher would record "on-task" behavior when the bell sounds—at the end of an interval—and record "fighting" behavior if and when it occurred during that interval.

Recording as the Basis for Reinforcement

Once a baseline of target behavior has been obtained, the teacher may utilize the observing procedure as an explicit basis for dispensing reinforcement for appropriate behavior. For example, if the target student is behaving appropriately when the bell rings, he might earn a point, which could be "backed-up" by or redeemed for an infinite variety of privileges or tangible reinforcers. The reinforcers might be dispensed in the classroom, or a note indicating the daily number of points earned might be sent home for redemption there. The teacher would then have

additional motivation to continue recording, because setting the timer is an integral part of remediation. As long as the teacher goes along with the intervention procedures, she would at the same time be collecting evaluation data.

Timers set on variable-interval schedules have been used successfully in numerous studies as the basis for dispensing token reinforcement (Brodén, Hall, Dunlap, and Clark, 1970; Schmidt and Ulrich, 1969; Wolf, Giles, and Hall, 1968; Wolf, Hanley, King, Lackowicz, and Giles, 1970; Wolf and Risley, *unpublished*). In none of these studies, however, was the bell ring related to the evaluation/recording procedures. In each case, an outside observer coded the target behaviors.

Illustrative Example

During the last month of the school year, a seventh-grade social studies teacher was experiencing difficulty with a particular student "who never does her work" (Sloggett and Kubany, *unpublished*). The teacher's coding procedure was described to the teacher and on the first day of observation, an outside observer (a new-teacher supervisor) established interrater reliability with the teacher. Utilizing the VI 4-min schedule, the teacher and the teacher trainer agreed on eight of nine observations

(89%) during the 50-min class period. Figure 3 shows that during a six-day baseline, the remiss student was "on-task" when the timer sounded 53% of the time. During the remainder of the observations, the coded behaviors were relatively equally distributed as "out of seat", "passive", and "disruptive". As an intervention procedure, it was decided to award the entire class 1 min of free time for card playing at the end of the class period each time the referred girl was "on-task" when the timer sounded. Figure 3 shows that during the intervention period, on-task behavior increased to an estimated 89%. It might be added that the teacher reported that, for her, recording the data and resetting the timer were not inconvenient and did not require her to deviate from her regular routine. She also reported that after the first few bell rings, the class paid no attention to the ringing bell.

DISCUSSION

One of the distinctive features of this coding procedure is that it relieves the teacher of the responsibility of keeping track of when to record. The timer bell provides an explicit discriminative stimulus for observing/recording behavior.

Of course, it should be stressed that development of this procedure was motivated primarily to minimize the amount of professional time necessary to implement behavioral intervention programs in the classroom and still maintain a rigorous means for monitoring and evaluation.

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Fig. 3. Daily percentage of observations that student's behavior was coded as on-task. Her behavior was coded eight or nine times per 50-min class period on a VI 4-min schedule.

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